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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,409	03/26/2004	Toru Tojo	251154US2SRDX	7571

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EXAMINER
AKANBI, ISIAKA O

ART UNIT	PAPER NUMBER
2886	

NOTIFICATION DATE	DELIVERY MODE
09/13/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/809,409	TOJO ET AL.	
	Examiner	Art Unit	
	Isiaka O. Akanbi	2886	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *17-21* is/are allowed.

6)☒ Claim(s) *1-3,6-11 and 14-16* is/are rejected.

7)☒ Claim(s) *4,5,12-13 and 22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Amendment

The amendment filed on 19 June 2007 has been entered into this application.

Claim Objections

Claim 1 is objected to because of the following informalities: line 3, "on" should be changed to ---of---. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 6-9 & 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dayal et al. (7,046,352).

Regarding to claims 1 and 9, Dayal teaches of a pattern inspection apparatus to inspect pattern defects of a substrate comprising an illumination optics (fig. 1; 103,107,108,109) which applies a first inspection light (fig. 1; 104) of a predetermined wavelength to a surface opposite to a pattern formed surface of the substrate (110), and applies a second inspection light (fig. 1; 106) whose wavelength equal the predetermined wavelength of the first inspection light to the pattern formed surface (fig. 1), a detector (D)(i.e. detector arrays)(col. 4, line 61-65) which selectively detects a transmitted light through the substrate by irradiation of the first inspection

light and a reflected light from the substrate by irradiation of the second inspection light so as to perform a transmitted-light-based inspection and a reflected-light-based inspection (col. 4, line 59-col. 5, line 1-3) and a space separation mechanism (107) relative position of reflected/transmitted light) which is provided in the vicinity of an optical focal plane toward the pattern formed surface of the substrate.

Dayal fails to disclose that a space separation mechanism spatially separates an irradiation area of the first inspection light and the second inspection light such that the transmitted light through the substrate is imaged in one area on optical focal plane separated from another area where the reflected light from the substrate is imaged. However, since Dayal does not limit the transmitted light and reflected light to coaxial beams that pass through or reflect from the same point, it would have been at least obvious to one having ordinary skill in the art at the time of invention was made to spatially separates an irradiation area of the first inspection light and the second inspection light such that the transmitted light through the substrate is image in one area on optical focal plane separated from another area where the reflected light from the substrate is imaged for the purpose of measuring multiple location/area simultaneously with accuracy.

As to claims 6 and 14, Dayal also discloses wherein the optical focal plane toward the pattern formed surface of the substrate at least a magnification focal plane of an observation field observed in the pattern formed surface, and a mirror (fig. 1; 107,109) is used as the space separation mechanism, and the mirror is fixed at a position offset from the optical focal plane.

Claims 7 and 15, Dayal discloses a supporting stage (not shown), suggested TDI sensor (fig. 1)(col. 4, line 65-67).

Dayal is silent regarding an XY stage on which the substrate mounted and the type of sensor used as a detection sensor being (i.e. TDI sensor) and that number of accumulation

steps of the TDI sensor for the transmitted-light-based inspection is different from that of the accumulation steps of the TDI sensor for the reflected-light-based inspection. There is no reason for the number accumulation steps of the sensor (i.e. TDI sensor) for the transmitted-light-based inspection and the accumulation steps of the sensor (i.e. TDI sensor) for the reflected-light-based inspection to be the same since they are independent of each other.

The use of an XY stage on which the substrate is mounted to obtain a pattern image and a sensor (i.e. TDI sensor) is known, as evidenced by Maeda et al. (6,556,290 B2)(fig. 3). It would have been at least obvious to one having ordinary skill in the art at the time of invention was made to provide an XY stage on which the substrate mounted and the number of accumulation steps of the TDI sensor for the transmitted-light-based inspection that is different from that of the accumulation steps of the TDI sensor for the reflected-light-based inspection for the purpose scanning, aligning and measuring with accuracy.

As to claims 8 and 16, Dayal also discloses wherein the illumination optics (103/107/108/109) has a single light source (101)(fig. 1).

Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dayal et al. (7,046,352) in view of Murakami et al. (5,017,798)

As to claims 2 and 10, Dayal disclose using detector arrays (i.e. multiple sensing elements)(col. 4, line 61-65) and detection optics (fig. 1; 103/107/108/109).

Dayal is silent regarding a first detection optics and a second detection optics.

However providing separate detection optics for two separate beams (i.e. transmitted light and reflected light) is known, as evidenced by Murakami (figs. 3 and 5; 7a, 7b). It would have been at least obvious to one having ordinary skill in the art at the time of invention was

made to provide a first detection optics which leads the transmitted light separated by the space separation mechanism to the detector and a second detection optics which leads the reflected light separated by the space separation mechanism to the detector for the purpose of using multiple devices to detect reflected light and transmitted light simultaneously with accuracy.

Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dayal et al. (7,046,352) in view of Murakami et al. (5,0171798) and further in view of Nikoonahad et al. (6,919,957 B2).

As to claims 3 and 11, Dayal when modified by Murakami is silent regarding the use of the first detection optics and the second detection optics to change a magnification for an observed image and change an illumination area of the illumination optics in accordance with the magnification thereof.

The use of detection optics to change the magnification for an observed image is known, as evidenced by Nikoonahad et al. (col. 160, claim 86), it would have been at least obvious to one having ordinary skill in the art at the time of invention was made to provide detection optics that change a magnification for an observed image for the purpose of detecting and determining a critical dimension of a micro defects or a macro defects on a front side of the specimen with accuracy.

Allowable Subject Matter

Claims 17-21 are allowable

As to claim 17, the prior art of record, taken alone or in combination, fails to disclose or render obvious a polarizing beam splitter which is provided in the vicinity of an optical focal plane between the pattern formed surface of the substrate and the second detection sensor, and reflects or transmits the first inspection light and the second inspection light to send to the

pattern formed surface of the substrate, and transmits or reflects the reflected light from the substrate to send to the second detection sensor, in combination with the rest of the limitations of the claim.. Claims 18-21 are allowable by virtue of their dependency on claim 17.

Claims 4-5, 12-13 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim 4, the prior art of record, taken alone or in combination, fails to disclose or render obvious illumination optics has a polarizing beam splitter provided between the pattern formed surface of the substrate and the space separation mechanism, and the polarizing beam splitter reflects the second inspection light to lead the second inspection light to the pattern formed surface of the substrate, and lets the transmitted light through the substrate and the reflected light from the substrate pass through, in combination with the rest of the limitations of the claim. Claim 22 is allowable by virtue of its dependency.

As to claim 5, the prior art of record, taken alone or in combination, fails to disclose or render obvious the illumination optics has a polarizing beam splitter provided between the space separation mechanism and the detector, and the polarizing beam splitter transmits or reflects the second inspection light to lead the second inspection light to the space separation mechanism, and reflects or lets through the reflected light from the substrate obtained via the space separation mechanism to lead the reflected light to the detector, in combination with the rest of the limitations of the claim.

As to claim 12, the prior art of record, taken alone or in combination, fails to disclose or render obvious the second illumination optics has polarizing beam splitter provided between the

pattern formed surface of the substrate and the space separation mechanism, and the polarizing beam splitter reflects the second inspection light to lead the second inspection light to the pattern formed surface of the substrate, and lets the transmitted light through the substrate and the reflected light from the substrate pass through, in combination with the rest of the limitations of the claim.

As to claim 13, the prior art of record, taken alone or in combination, fails to disclose or render obvious the second illumination optics has a polarizing beam splitter provided between the space separation mechanism and the second detection sensor, and the polarizing beam splitter transmits or reflects the second inspection light to lead the second inspection light to the space separation mechanism, and reflects or lets through the reflected light from the substrate obtained via the space separation mechanism lead the reflected light to the second detection Sensor, in combination with the rest of the limitations of the claim.

Response to Arguments

Applicant's arguments/remarks, see pages 10-12, filed on 19 June 2007, with respect to the rejection(s) of claim(s) 1-3, 6-8,10-11 and 14-16 and under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of claim amendment.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

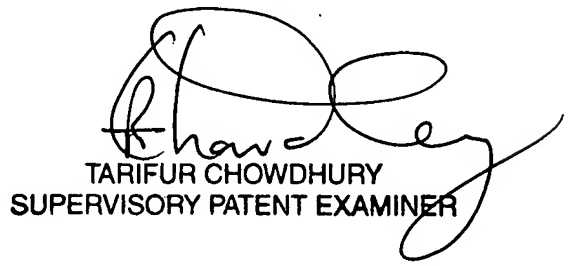
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tarifur R. Chowdhury can be reached on (571) 272-2287. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isiaka Akanbi

September 1, 2007



TARIFUR CHOWDHURY
SUPERVISORY PATENT EXAMINER